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Inspiring Action.*

BHEF STEM Higher Education and Workforce Projects

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Creating Solutions. Inspiring Action.



BHEF Overview

Since 1978, BHEF leaders work together to advance solutions to our nation's most significant educational challenges and enhance competitiveness

- **Diverse Membership**
 - Fortune 500 CEOs and senior executives
 - University presidents
 - Select government and foundation leaders

- **Long History of Member-Led Initiatives**
 - Business-university research collaboration
 - Diversity
 - College readiness, access, and success
 - STEM
 - Workforce



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BHEF: Focusing on the Global Economic Challenge

- BHEF members understand the premium that global economic integration places on innovation and developing a world-class STEM workforce is at the heart of this challenge
- BHEF members are collaborating to develop this workforce through STEM Higher Education and Workforce Projects, addressing the highest demand areas, e.g., cybersecurity



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BHEF Member-Led STEM Working Group

Years of deep, intensive focus on STEM

- Teamed in 2007 with Raytheon CEO Bill Swanson and Raytheon modeling team to build the first system dynamics model of U.S. STEM education
- Modeling produced insights that led BHEF to focus on higher education and suggested strategy for P-12
- BHEF launched STEM Higher Education and Workforce Project initiative to better align higher education with STEM workforce needs



Current workforce demands indicate acute labor surpluses and shortages and portend severe future shortages.

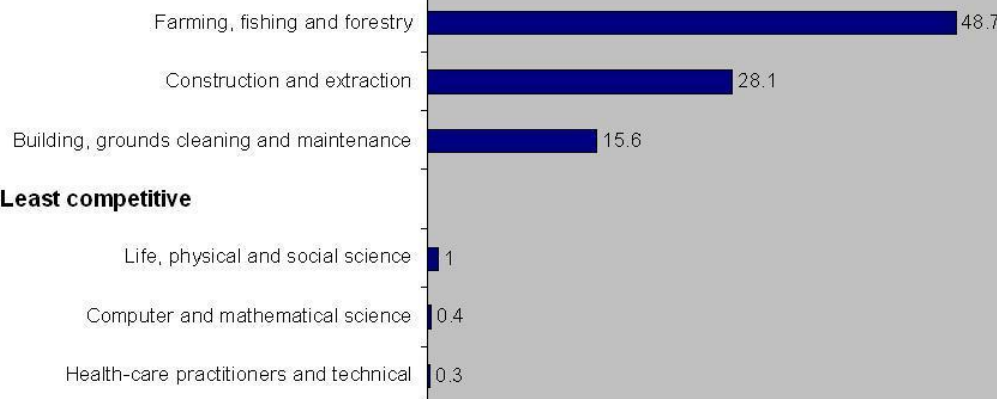
Current Workforce Surpluses and Shortages

Help (More or Less) Wanted

The industries with the most and least acute labor shortages

Most competitive

Job seekers per online opening in December



Note: Excludes duplicate job ads; Openings in some occupations may be posted online less frequently.

Source: Bureau of Labor Statistics; The Conference Board

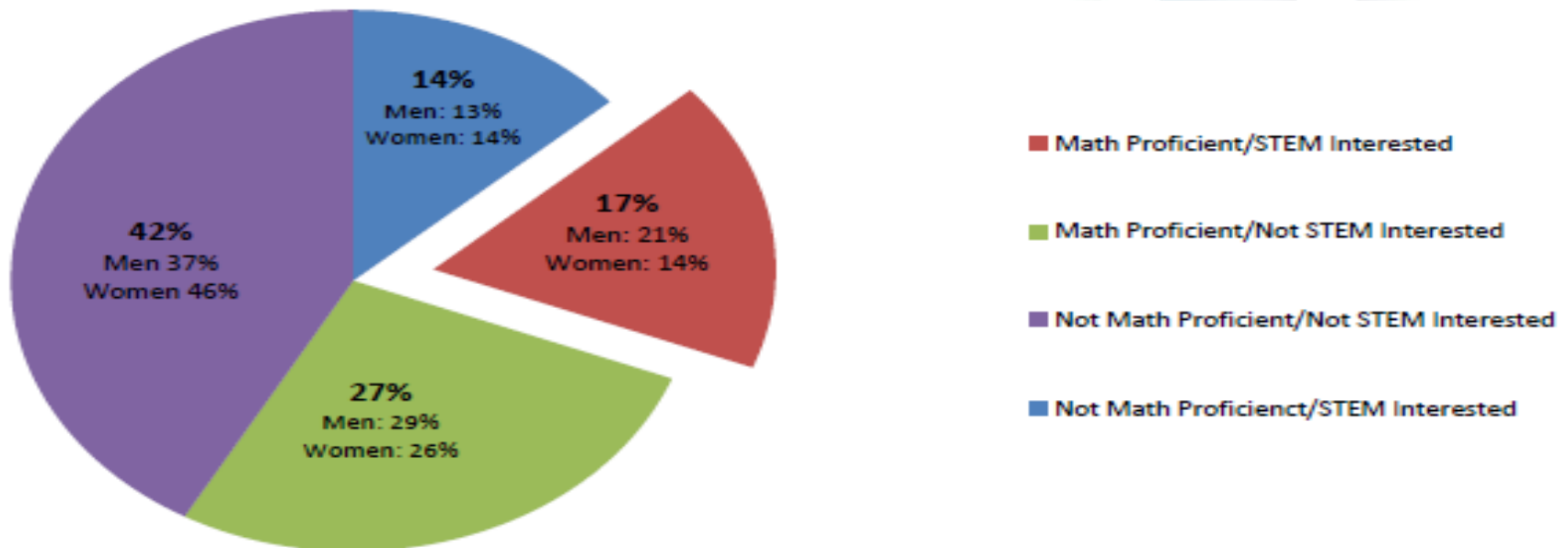


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But P-12 and higher education are not aligned with workforce demands to address the STEM challenge:
By 12th grade, **only one in five students is math proficient and interested in a STEM career**, with women and minorities underrepresented among this group.



SOURCE: BHEF. (2011). Analysis of EPAS data provided by ACT.



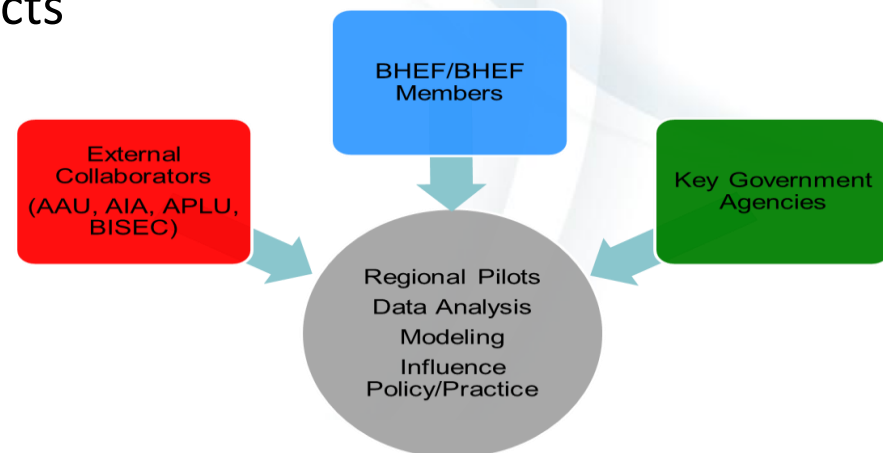
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Complementary STEM Strategies

- **Regional Strategy:** Engage BHEF business and higher education partners in innovative regional projects that deploy best practices in different fields (e.g., engineering, cybersecurity, chemistry) and respond to workforce needs
- **National Strategy:** Creation and deployment of a national STEM higher education collaboration with industry associations (BISEC, AIA, TechNet) and higher education associations (AAU, APLU, ASEE) to align goals, share learning, and partner on regional projects
- **STEM Modeling:** Systems dynamics modeling to show the impact of STEM “interventions” at scale





BHEF Regional Strategy

Launch 12 projects in 2012 and Scale in Future Years

- Focus on the first two years of college
- Create unique, sector-focused regional pilots
 - Directly align with local workforce needs
 - Move evidence-based best practices into real-world, on-the-ground settings



BHEF Regional Strategy

- **Forge deeper relationships between industry and universities**
 - Identify emerging regional workforce needs
 - Develop new innovative STEM educational models (cyber teaching hospital, 2+2's, entrepreneurship in STEM, PSM's)
 - Deploy proven practices (earlier internships; course re-design; mentoring and career pathways; cooperative programs; and living/learning communities)
- **Establish network of projects as national proof points**
 - Serve as inputs to the BHEF U.S. STEM Education Model® 2.0
 - Create a network for scaling and exporting learning



BHEF Regional Project: Maryland ACE Scholars

- **Northrop Grumman and the University of Maryland College Park**
 - Innovative model of aerospace industry-higher education partnership
- **Undergraduate Cyber “Teaching Hospital”**
 - Alignment with local cyber workforce needs
 - Focus on the first two years of college
- **New Interdisciplinary Honors Program in Cybersecurity**
 - Includes: Earlier internships; redesigned courses and new teaching methods focused on active student learning; undergraduate mentoring and career guidance by STEM professionals
- **Maryland Cyber Network** engages industry on all levels to coordinate strategy and tactics



BHEF National Strategy

Link Industry and University Associations to Increase STEM Graduates

- National examination of postsecondary STEM and workforce alignment
- Learning from regional projects to bring proof points to scale
- Development of a National STEM Higher Education Strategy
 - Industry and academic associations co-create strategy
 - Action-agenda focused on what the group can do together

Academic Partners

American Council on Education
American Society for Engineering Education
Association of American Universities
Association of Public and Land-Grant Universities

Industry Partners

Aerospace Industry of America
BISEC
National Defense Industrial Association
TechNet
Professional Societies: ACS



BHEF U.S. STEM Education Model® 2.0

- Large multi-year grant for ONR's *STEM2Stern* Initiative
 - Use model to highlight leverage points in higher education investments, focusing on first two years of post-secondary
 - Adapt model to include research-based interventions
 - Release of new version in fall 2012
- Serves as Tool for Understanding Navy's Workforce Landscape
 - Evaluate Navy's workforce needs and ROI from programs
 - Review research and select Intervention Strategies to model, focusing on the first two years of college
 - Provide guidance on greatest leverage points to meet Navy's unique needs



For Additional Information

- BHEF STEM Higher Education and Workforce Project:
<http://bhef.com/solutions/stem/hewp.asp>
- BHEF STEM Research and Policy Series:
<http://www.bhef.com/publications/research-briefs.asp>
- BHEF U.S. STEM Education Model®:
<http://forio.com/simulate/bhef/u-s-stem-education-model/overview/>
- BHEF's Online Resource Center:
www.StrategicEdSolutions.org